GeneSat-1 Days 8-13 Mission Operations Summary: T = Launch + 12 days, 20 hours

C. Kitts, 12/28/06

During mission Days 8-13, GeneSat contact operations have been limited due to the holidays, the successful completion of the biological experiment and the download of its baseline data by mission Day 7, and the overtime hours the operations team had been working during the prior several weeks. Data from brief contacts on Days 11 and 13 (as well as from steadily collected and submitted beacon data) shows that the satellite is in a healthy condition with payload temperature control holding steady at 25 degrees C. Bus temperatures are nominal (solar panel temps ~ 5 deg C in eclipse; external payload enclosure temp ~ 18 deg C), there have been no CPU resets, and power parameters appear normal. The clocks continue to drift, with the bus clock now on the order of 50+ min off of the RTC value.

Significant events relating to ground segment operation occurred during the past 6 days:

- The most significant event was severe weather during Days 11 and 12, which included wind gusts of 65+ mph. These were significant enough that a contact on Day 11 was terminated (due to the wind overpowering the AZ servo) and contacts on Day 12 were cancelled. The wind also caused significant damage to the new mesh surface, which will require on the order of a day to repair (although this must wait until next week given the need for special equipment that is currently unavailable given the holiday period). The damage was thought to be bad enough to prevent 2.4 GHz communication, but during a contact on Day 13, the ops team was able to successfully conduct limited command and telemetry operations (although at a relatively low command channel success rate of ~ 20%).
- A power outage occurred at the SRI station on Day 12 for a period of approximately 45 min. This was associated with the windstorm. This event contributed no further downtime given that operations for the day had already been cancelled and the downtime (~1120-1205 PST) was not during a period of satellite availability.
- A 10.5 hour power outage at Ames on Days 8 and 9 caused network access to Building 240 to be unavailable. This event did not affect realtime contact operations since they had been cancelled for those days given the holiday. However, they did interfere with a training/practice session. We note that the outage spanned a full day's worth of satellite availability had operations been planned for those days.

A daily synopsis of activities:

- Day 8: Scheduled as crew rest - Training contact run for practice
- Day 9: Scheduled and taken as crew rest
- Day 10 (Christmas): Scheduled and taken as crew rest
- Day 11: Scheduled as crew rest – Training contact run for practice but terminated due to winds
- Day 12: Operations cancelled due to continued high winds
- Day 13: Station inspection and functional tests due to wind damage. Operations conducted with reduced command channel success due to wind damage during the first contact (~2145 PST). During the second contact of the evening, an AZ servo shut-down glitch occurred early in the contact, requiring termination (such glitches are common in general, but are rare during active tracks in nominal conditions). Termination occurred at approximately 15 deg ascending EL, prior to any successful 2.4 GHz commands (although beacon packets were being successfully received and processed).

Current ground segment status. Control nodes nominal. SRI communication station is functional, but wind damage to the mesh is limiting command channel performance; repairs are being scheduled for next week. SCU communication station is operational.

The MEPSE mission has been completed, so conflicts with MEPSE operations is no longer an issue.

Amateur radio operators continue to track the satellite, with more than 13,700 externally acquired and submitted packets during the first 10 days of operation. The dashboard website has received 41,000+ hits in the past week.

Day 13 Mission Operations Team: Mike Rasay – command channel operator, Phelps Williams– beacon channel operator, Chris Kitts –telemetry analyst, Paul Mahacek – dish tracking.